NAME : _____

SECTION : (circle one) 12:30–1:35 1:45–2:50

Math 8

due Monday, February 15, 2010
Homework #6 — covers Lectures 16–18

INSTRUCTIONS: Collaboration on homework is encouraged. The use of computing devices is allowed on homework (but *not* on exams). Please feel free to attach extra pages if your solutions require them. A correct answer with incorrect work will be considered wrong.

FERPA RELEASE: Because of privacy concerns, we are not allowed to return your graded homework in lecture without your permission. If you wish us to return your homework in lecture, please sign on the line indicated below. Otherwise, you will have to pick your homework up in your instructor's office.

SIGN HERE: _____.

Problem	Points	Score
1	4	
2	4	
3	4	
Total	12	

1. (4) Determine whether the following are true or false in 3-space. (No work is required.)

(a) Two planes either intersect or are parallel.

(b) Two lines either intersect or are parallel.

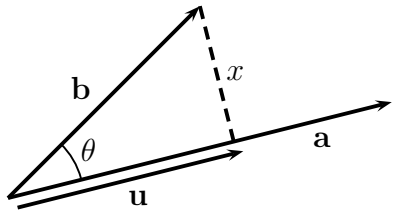
(c) Two lines parallel to a plane are parallel.

(d) Two lines orthogonal to a third line are parallel.

(e) A plane and a line either intersect or are parallel.

(f) Two planes orthogonal to a third plane are parallel.

2. (4) Consider the vectors $\mathbf{a} = \langle 4, 1 \rangle$ and $\mathbf{b} = \langle 2, 2 \rangle$, shown below. Compute $\cos\theta$, $\mathbf{u}$, and the length x.



3. (4) For each of the following pairs of lines determine whether they are parallel, intersecting, or skew.

(a) $\begin{cases} x = 3t - 2, & y = t + 3, & z = 5t - 3 \\ x = -6s - 5, & y = -2s, & z = -10s - 6 \end{cases}$

(b) $\begin{cases} x = 3t - 2, & y = t + 3, & z = 5t - 3 \\ x = s - 4, & y = 2s, & z = 4s - 6 \end{cases}$